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Ms. Lynda Deschambault
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DRAFT FEASIBILITY STUDY REPORT, JANUARY 2010 FOR THE FORMER OMEGA CHEMICAL FACILITY

Dear Ms. Deschambault:

The Department Of Toxic Substances Control has reviewed the Draft 2010 Feasibility Study Report (Report) dated January 2010 for the subject Site.

DTSC has identified deficiencies in the reviewed report. Please find attached comments on the document from the DTSC Project team which should be considered in a revised Report. Identified problem areas include but are not limited to modeling, consideration of treatment options and the identification of appropriate remedial objectives. DTSC reserves the right to further comment on the document during the public comment period as needed.

If you have any questions please contact me at (818) 717-6546 or e-mail LParnass@dtsc.ca.gov

Sincerely,

Lori Parnass
Project Manager
Brownfields and Environmental Response Program - Chatsworth

Enclosure

DTSC COMMENTS ON THE DRAFT FEASIBILITY STUDY REPORT, JANUARY 2010, FOR THE FORMER OMEGA CHEMICAL FACILITY, SANTA FE SPRINGS, CALIFORNIA

The Omega Chemical Superfund Site consists of two operable units. Operable Unit 1 is located at 12504/12512 East Whittier Boulevard, and covers just under one acre of land. It contains two buildings and is paved. It was first developed in 1951 by a bullet manufacturer, Sierra Bullets, and operated until 1963. From 1976 to 1991, the site was operated by Omega Chemical as a treatment and disposal facility for liquid waste, and a transfer station for consolidation and shipping of waste. Since 2003, an auto body shop and warehousing has occupied the property. Wastes that were handled by Omega included organic solvents, some mixed with water, from a variety of processes including petroleum refining, rubber and plastics, papermaking, furniture finishing, lumber and wood treatment, and food processing. COCs detected at the site include PCE, TCE, 1,1,1-TCA, 1,1-DCE, 1,4-dioxane, Freon 11, Freon 113, chloroform, methylene chloride, benzene, and acetone.

Operable Unit 2 consists of the downgradient extent of affected groundwater, and extends about 4.5 miles south-southwest of the Omega property. It mainly includes a developed industrial area overlying groundwater aquifers tributary to the San Gabriel River. During the Superfund investigation, several additional sources of contaminants were identified in the region.

Comments:

1. The overall plume velocity used in the text is questionable, because it includes parts of the plume that reasonably could have come from downgradient sources. The calculation apparently assumes that the entire extent of the PCE plume beyond Angeles/McKesson is Omega's, not Angeles/McKesson's. This assumption is questionable, because there are other PCE sources downgradient of Omega. DTSC suggests 1,4-dioxane is a better tracer to use because it is not subject to degradation or retardation, and represents true groundwater velocity. Based on 1,4-dioxane concentrations, it is not clear that the main Omega plume extends beyond Angeles/McKesson, and recalculation gives a velocity of 200'/yr and results in less than half the quoted velocity.
2. The model was calibrated to heads, not flows as stated. The flows used by the USGS were assumed correct, and were not changed during calibration. Parameter estimation was used to calibrate heads within acceptable levels, but this solution is non-unique and depends heavily on the accuracy of the flows which make up the water balance. In the case of this model, heads are the most accurately known parameter, and flows are one of the most uncertain, yet without knowing flows, there is no way to know what K-field is correct, since an infinite number of Ks will calibrate to the same set of heads. Calibration to heads will not ensure that the modeled velocities are correct, since for a given gradient, velocity is a function of the ratio of flow to conductance. Some effort should be made to also verify boundary flows in order to reduce uncertainty.
3. The groundwater model calibration relies on an assumption that boundary flows are accurate. As a result, there is considerable uncertainty in the results, which could be reduced by further constraining flows at the boundaries. A groundwater budget for the model is needed that compares boundary inflows by category, including layer-by-layer pumpage, recharge, and outflow. If recharge and discharge from constant-head nodes significantly exceeds areal recharge and mountain-front recharge, then these terms have likely been overestimated, and therefore hydraulic conductivity in the lower model area is overestimated.

4. Quantitative velocities calculated by the model should not be relied on until additional work is done to verify flow rates and volumes.
5. Tabulation of the model water budget by zone and boundary type would be very useful to document the model water budget. In general, subsurface inflow and outflow ought not exceed areal recharge, and certainly not by orders of magnitude.
6. Because the design of the pump-and-treat options rely heavily on the aquifer being able to sustain the calculated flow rates, any uncertainty in transmissivity due to errors in boundary flows will translate into uncertainty in the number, placement, pump rates, and costs of the treatment system wells. Uncertainty in plume velocity will translate into cleanup time estimates varying from the design.
7. The FS includes the plume map of only PCE while the proposed alternatives include remediation of other COCs as well. Figures showing all the COC plumes requiring remediation should be provided to assess their locations and magnitude with respect to the overall 4.5 miles plume, and to evaluate if the proposed alternatives are appropriate and/or cost-effective. This information may have been in the RI, however, those figures are pertinent to the proposed remediation alternatives and should be presented in the FS for ease of review.
8. Groundwater modeling - The simulated PCE plumes for all the alternatives show that, after 30 years, the width of the plume would somewhat shrink while the length would remain the same, and PCE concentrations ranging from 5 to 50 ug/L at the edge of the current plume would persist. Unless there is change in current regulations, the remediation will likely be required to continue after the 30 year period. Therefore, it is important to simulate how long it takes to achieve MCL within the plume so that both the financial and environmental lifetime cost of the project can be estimated, or if there is other more effective remedial alternative should be considered.
9. Extraction well locations - although extraction well locations may have been selected based on plume capture requirement, EPA should consider various extraction strategies to maximize mass removal rate while minimizing volume. DTSC would like the following scenarios be considered-
 - a) extracting from the 500 ug/L plume to increase mass removal,
 - b) extracting at the edge of the 100 ug/L plume instead of at 5 ug/L, and simulate the maximum impact on the active production wells, particularly, the ones with current wellhead treatments, evaluate if the diluted portion of the plume can be handled with the existing active wells.
 - c) treating the 1,4-dioxane and/or Cr VI plumes separately as hot spot removal, if feasible, to reduce both capital and O&M cost. Perform cost-effective analysis of localized/hot spot removal versus centralized treatment as is in the proposed FS.
 - d) simulate the above scenarios over several periods of time the same way as in Appendix A including time for reaching MCL.

10. Influent concentration - Simplified assumptions were made to estimate the design basis influent concentration and indicated that a more rigorous method will be used during the RD phase. Given the relatively low influent concentrations of 1,4-dioxane and Cr VI compared to their discharge limitations, DTSC believes it is prudent to use fate and transport modeling to estimate their concentrations at extraction points and to determine whether or not the additional treatments are necessary, especially with the recommendation in General Comment 3(c).

Specific Comments:

1. Alternative 2 - LE: Advanced Oxidation Process (AOP) for treating 1,4-dioxane incur a considerable cost. Table 3-2 shows the design influent concentration of 3.6 ug/L for the first 15 years, and 7.1 ug/L for the second 15 years. The drinking water discharge limits for 1,4-dioxane is 3 ug/L. As the estimated influent concentration is very close to the discharge limit, the need for the AOP for this alternative should be reevaluated. See General Comment 4 above.
2. Table 3-2 thru Table 3-5: Influent concentrations of Cr VI for Alternative 2 thru 5 are higher than the discharge limits, but only Alternatives 3 and 5 consist of ion exchange units for removal of Cr VI. This discrepancy need to be rectified for Alt. 2 and 4, and the cost of these alternatives should also be adjusted.
3. Table 3-6: The extraction scenario for Alternative 6 is the same as Alternatives 3 thru 5. But, Cr VI is missing from Table 3-6 and no ion exchange unit is included in the treatment process. See comment 2 above.
4. Process flow diagrams: The AOP could cost more than LGAC to treat VOCs. And, since the AOP is intended for removal of 1,4-dioxane, DTSC recommends to evaluate the cost difference by moving LGAC upstream of AOP to remove the VOCs first.
5. Page 2-1, Section 2.2 (Remedial Action Objectives) Table 2-1, Identifies the COC hexavalent chromium screening level as 11 µg/L. This is based on the protection of aquatic life and would only be relevant for discharge into a surface body of water. Currently, DTSC is using the California MCL for total chromium (50 µg/L) for combined hexavalent and trivalent chromium, as a cleanup goal for beneficial use groundwater.
6. Page 2-14, Section 2.3.3.4 (To-Be-Considered Criteria, Total and Hexavalent Chromium): Regarding the screening level for hexavalent chromium, please see Comment No.1. Recently, the Office of Environmental Health Hazard Assessment (OEHHA) developed a draft PHG of 0.05 µg/L for hexavalent chromium. However, this PHG is still draft and has not been finalized. As stated previously, DTSC is currently using the total chromium MCL of 50 µg/L as the cleanup goal for groundwater.
7. Page 3-1, Section 3 (Development of Alternatives): Table 3-2 lists a drinking water discharge limit of 5 µg/L for hexavalent chromium; should this be 50 instead of 5? For Table 3-4, the drinking water discharge limit for hexavalent chromium for reinjection water is listed as 8 µg/L, which is the limit for the Los Angeles River and is designed for protection of ecological receptors in a sensitive surface water body, not drinking water.